

CLAIMS

What is claimed is:

1. A storage array network, comprising:  
a first and second storage array controller module, wherein each storage array controller module has a first and second array controller unit; and  
an array of storage devices,  
wherein the first storage array controller module is a primary storage array controller that normally performs storage array controller functions and the second storage array controller module is a redundant back up,  
wherein the second array controller module provides an availability signal to the second storage array controller module,  
wherein if the second array controller module does not receive a signal from the first storage array controller module within a given period of time, the second storage array controller module asserts control over the array of storage devices.
2. The storage array network of Claim 1, further comprising a storage array switch electrically connected between the first and second storage array controller modules and the array of storage devices.
3. The storage array network of Claim 2, wherein the storage array switch is a Fibre Channel quick loop switch.
4. The storage array network of Claim 1, further comprising first and second interface switches and first and second host devices electrically connectable to the first and second storage array controller modules through the first and second interface switches.

5. The storage array network of Claim 1, wherein the first array controller units of the first and second storage array controller modules are grouped together into a first multicast group.
6. The storage array network of Claim 5, wherein a host broadcasts a command to the first multicast group.
7. The storage array network of Claim 6, wherein frames for the first array controller unit of the first storage array controller module are forwarded to the first array controller unit of the second storage array controller module.
8. The storage array network of Claim 1, wherein redundancy and drive control is accomplished through multiple storage array controller modules.
9. The storage array network of Claim 1, wherein, if one of the storage array controller modules fails, another storage array controller module assumes control.

10. A method for maintaining operation of a storage array network system, comprising:

submitting a command to a primary array controller module and a secondary array controller module;

performing a handshaking protocol between the primary array controller module and the second array controller module to determine which of the primary and the second array controller modules is to process the command; and

timing of an aspect of the command.

11. The method of Claim 10, wherein the step of performing a handshaking protocol includes the substeps of, if the primary array controller module is able, sending a primary module ready signal to the secondary array controller module;

if the secondary array controller module is able, sending a secondary module ready signal to the primary array controller module; and

if the primary array controller module is able, processing the command before an expiration of a given time.

12. The method of Claim 11, wherein the step of performing a handshaking protocol includes the substeps of if the primary array controller module is able, sending a primary module acknowledge signal to the secondary array controller module upon receipt of the secondary module ready signal.

13. The method of Claim 12, wherein the step of performing a handshaking protocol includes the substeps of removing the command from a queue of the secondary array controller module.

14. The method of Claim 13, wherein the step of performing a handshaking protocol

includes the substep of disabling ports associated with a drive tray bank associated with the primary array controller module.

15. The method of Claim 10, wherein if the primary array controller module successfully handshakes with the secondary array controller module within a given time, the primary array controller module processes the command.

16. The method of Claim 15, wherein if the secondary array controller module unsuccessfully handshakes with the secondary array controller module within a given time, the secondary array controller module processes the command.

17. The method of Claim 10, wherein when the timing reaches a time limit, processing of the command is performed by the secondary array controller module.

18. The method of Claim 17, wherein the time limit is measured from a time of transmission of the command from a host.

19. The method of Claim 18, wherein the command is transmitted from the host through an interface switch to the primary and secondary array controller modules.

20. The method of Claim 10, wherein redundancy and drive control is accomplished through multiple storage array controller modules.

21. The method of Claim 19, wherein, if one of the storage array controller modules fails, another storage array controller module assumes control.

22. A method for establishing a redundant array controller module in a storage array network, comprising:

receiving a command by primary and secondary array controller modules from a host;

storing the command within two queues, each of the queues being associated with one of the primary and secondary array controller modules;

if the primary array controller module processes the command before a time out, then removing the command from the queue of the secondary array controller module; and

if the primary array controller module times out, then processing the command by the secondary array controller module.

23. The method of Claim 22, wherein both the primary and secondary array controller modules are in active mode.

24. The method of Claim 22, wherein one of the primary and secondary array controller modules is in standby mode.

25. The method of Claim 22, wherein, if the primary array controller module times out, the secondary array controller module disables ports associated with a drive tray bank of the primary array controller module.

26. The method of Claim 22, wherein redundancy and drive control is accomplished through multiple storage array controller modules.

27. The method of Claim 22, wherein, if one of the storage array controller modules fails, another storage array controller module assumes control.